

PATENT  
Attorney Docket No. 13226US02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:

G. Ungerboeck et al.

Serial No.: 09/898,850

Filed: July 3, 2001

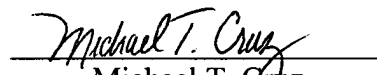
For: SYSTEM AND METHOD FOR  
HUFFMAN SHAPING IN A  
DATA COMMUNICATION  
SYSTEM

Group Art Unit: 2634

Examiner: D.V. Ha

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail, postage prepaid, in an envelope addressed to: MS: RCE, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on January 25, 2006.

  
Michael T. Cruz  
Reg. No. 44,636

**INFORMATION DISCLOSURE STATEMENT  
ACCOMPANYING REQUEST FOR CONTINUED EXAMINATION**

MS: RCE  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

I. **ENCLOSURES**

Enclosed are the following:

- \* a completed PTO Form SB 08A comprising two (2) pages listing two (2) U.S. Patents and seventeen (17) non-patent literature documents; and
- \* copies of the seventeen (17) non-patent literature documents.

The two (2) U.S. Patents were cited by the Examiner in the Office Action of November 1, 2004; however, the two (2) U.S. Patents failed to be listed on the accompanying PTO Form 892. Applicants list the two (2) U.S. Patents herein so that they may appear on the face of any issued

patent.

II. FEE DETERMINATION

No additional information disclosure statement fee is believed due since this information disclosure statement is being filed with a request for continued examination.

III. FEE PAYMENT

The Commissioner is hereby authorized to charge any additional fees which are presently required, or credit any overpayment, to Deposit Account No. 13-0017.

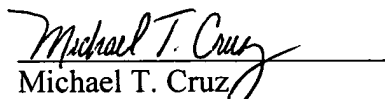
IV. REQUEST FOR CONSIDERATION

The filing of this information disclosure statement shall not be construed to be an admission that the information cited in this statement is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

It is respectfully requested that this paper and enclosures be considered by the Examiner. Furthermore, the Examiner is respectfully requested to initial a copy of the enclosed PTO Form SB 08A and to return a copy to Applicants to indicate consideration of the enclosed listed documents.

Date: January 25, 2006

Respectfully submitted,

  
Michael T. Cruz  
Reg. No. 44,636

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Substitute for form 1449A/PTO				<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANTS</b>  <i>(use as many sheets as necessary)</i>				Application Number	09/898,850
				Filing Date	July 3, 2001
				First Named Inventor	Ungerboeck
				Group Art Unit	2634
				Examiner Name	D.V. Ha
Attorney Docket Number				13226US02	
Sheet	1	of	2		

## U.S. PATENT DOCUMENTS

Examiner Initial*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5,140,417	08.1992	Tanaka	
		5,253,078	10.1993	Balkanski et al.	

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>

## OTHER ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
		T.M. Cover, et al., <u>Elements of Information Theory</u> , Wiley Series in Telecommunications, A Wiley-Interscience Publication, 1991, pgs. 1-542
		J.M. Wozencraft et al., <u>Principles of Communication Engineering</u> , Chapter 6-"Implementation of Coded Systems," John Wiley & Sons, Inc., 1965, pgs. 363-484
		D.A. Huffman, "A Method for the construction of minimum-redundancy codes," Proc. IRE, vol. 40, 1952, pgs. 1098-1101
		M. Tomlinson, "New automatic equalizer employing modulo arithmetic," Electron. Lett., vol. 7, March 1971, pgs. 138-139
		G. D. Forney, Jr., "Trellis shaping," IEEE Trans. Inform. Theory, vol. 38, March 1992, pgs. 281-300
		P. Fortier, et al., "Multidimensional signal sets through the shell construction for parallel channels," IEEE Trans. Commun., vol. 40, March 1992, pgs. 500-512
		A. K. Khandani et al., "Shaping multidimensional signal spaces— Part I: Optimum shaping, shell mapping," IEEE Trans. Inform. Theory, vol. 39, November 1993, pgs. 1799-1808
		G. R. Lang et al., "A Leech lattice modem," IEEE J. Select. Areas Commun., vol. 7, August 1989, pgs. 968-973
		G. Ungerboeck et al., Broadcom Corporation, "Coding for V.90 Issue 2," TR-30.1/99-11-064R1, Telecommunications Industry Association, Clearwater Beach, FL, November 29, 1999

EXAMINER SIGNATURE	DATE CONSIDERED
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard St. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450 Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. Send TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1800-786-9199) and select option 2.


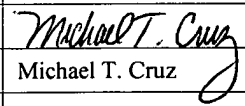
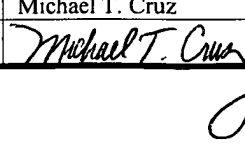
Substitute for form 1449A/PTO				<b>Complete if Known</b>	
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				Group Art Unit	2634
				Examiner Name	D.V. Ha
Sheet 2 of 2				Attorney Docket Number	13226US02

OTHER ART -- NON PATENT LITERATURE DOCUMENTS		
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published
		G. Ungerboeck, "Channel Coding with Multilevel/Phase Signals," IEEE Transactions on Information Theory, vol. IT-28, no. 1, January 1982, pgs. 55-67
		G. Ungerboeck, "Trellis-coded Modulation with Redundant Signal Sets, Part 1: Introduction," IEEE Communications Magazine, Vol. 25, No. 2, February 1987, pgs. 5-11
		H. Harashima et al., "Marched-transmission technique for channels with intersymbol interference," IEEE Trans. Commun., vol. COM-20, August 1972, pgs. 774-780
		R. Laroia, N. Farvardin and S. Tretter, "On optimal shaping of multi-dimensional constellations," IEEE Trans. Inform. Theory, vol. 40, July 1994, pgs. 1044-1056
		G.D. Forney, et al., "Modulation and coding for linear Gaussian channels," IEEE Trans. Inform. Theory, vol.44, No. 6, October 1998, pgs. 2384-2415
		G.D. Forney, et al., "Multidimensional constellations -- Part 1: Introduction, figures of merit, and generalized cross constellations," IEEE J. Select. Areas Commun., vol. 7, No. 6, August 1989, pgs. 877-892
		ITU-T Recommendation V.90 (09/98)
		ITU-T Recommendation V.32 (02/98)

EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard St. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

 <b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)		Application Number	09/898,850	
		Filing Date	July 3, 2001	
		First Named Inventor	Ungerboeck	
		Art Unit	2634	
		Examiner Name	D.V. Ha	
Total Number of Pages in This Submission		8	Attorney Docket Number	13226U02
<b>ENCLOSURES (check all that apply)</b>				
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement – 2 pages <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Reply to Missing Parts/Incomplete Application <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53		<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD Number of CD(s) _____ <input type="checkbox"/> Landscape Table on CD		
		<input type="checkbox"/> After Allowance Communication to TC <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Return-Receipt Postcard <input type="checkbox"/> Other Enclosure(s) (please identify below):		
Remarks		PTO Form SB 08A (2 pages) listing 2 US Patent documents and 17 non-patent literature documents		
<b>SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT</b>				
Firm	McAndrews Held & Malloy, Ltd.			
Signature				
Printed Name	Michael T. Cruz			
Date	January 25, 2006			
<b>CERTIFICATE OF MAILING</b>				
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 25, 2006.				
Name (Print/type)	Michael T. Cruz	Registration No. (Attorney/Agent)	44,636	
Signature			Date January 25, 2006	